



POLICY BRIEF

What counts as ‘evidence’?

Anine Kriegler

Evidence-based policing is the application of empirical research to police decision-making. ‘Evidence’ means knowledge derived from the principles of scientific method, namely critical thinking and careful observation. Policing decisions should be based on rigorous research, and there are many small steps that can build research into practice and vice versa. South African law enforcement officials, academics and researchers must find a common language for collaboration.

Key findings

- ▶ Evidence-based practice refers to the systematic use of empirical research as a basis for decision making.
- ▶ Evidence-based policing involves building an ongoing and mutual relationship between policing professionals (i.e. law enforcement officials) and knowledge professionals (i.e. academics or researchers). This must begin with a shared language.
- ▶ 'Evidence' in this context does not refer to the law of evidence or applied forensic science, but rather to knowledge derived from the scientific method. This means the systematic accumulation of ideas that have been empirically tested and haven't yet been proven wrong.
- ▶ Evidence-based policing replaces the traditional 'three Rs' of random patrol, rapid response and reactive investigations with the 'three Ts' of targeting, testing and tracking. This requires police to play the role of scientists, and subject their practices to the scientific method to examine cause and effect, while making the best possible efforts to exclude error.
- ▶ Evidence exists on a spectrum of rigour and confidence. Evidence-based practice can become highly technical, but its core is about critical thinking, curiosity and scepticism, careful empirical observation, and a willingness to be proven wrong.

Recommendations

- ▶ Police professionals and knowledge professionals should build a shared vocabulary to allow for the free flow of ideas. The communities should consider each other allies, with complementary skills and a shared interest in improving public safety.
- ▶ Researchers who conduct research on police practices should ensure that their results are shared with the appropriate police decision-makers and offer a clear guide to implementation or to further study.
- ▶ Police should identify their priorities for research, so that researchers can focus their work where it can have the best impact.
- ▶ Researchers and police should develop and support controlled and repeated evaluation of policing practices.
- ▶ Police should create an organisational environment of critical thinking, scepticism, and experimentation around their practices. They should develop 'evidence cops' to ensure that their practice is based on and/or can build towards the best available knowledge.
- ▶ Researchers and police should collaborate in working towards increasingly rigorous research designs but also find small ways to build empirical assessment into all policing practices.

Introduction

There is a growing movement towards ‘evidence-based practice’ in various spheres, including governance. The concept is modelled on medicine. Medical doctors are expected to stay up-to-date on developments in science, rather than rely on what was considered best practice when they were in medical school. Evidence-based practice can mean many things but amounts to a commitment to the systematic use of empirical research in decision making. It requires that proactive efforts be made to push the results of research into practice and also push practice into knowledge. This builds into a positive feedback loop, as shown in Figure 1.

Figure 1: The ongoing cycle between practice and research



‘Evidence-based policing’, driven in recent decades by widespread funding cuts and a crisis of confidence in traditional police practices,¹ is no exception. There are many competing definitions,² but it refers to the systematic practice of applying empirical research to the making of decisions in policing.

This is based on the view that just as policing requires certain equipment, knowledge of the law, proper procedures, physical skills, and so on, it also requires reliable knowledge of what works best at achieving the goals of policing.³ One clear and common goal is the prevention of crime, but there may be many

others – for example, building positive relationships with communities, creating workplace conditions that support employees’ mental and physical health, improved detection rates, or cost savings.

Evidence-based policing not only involves the transfer of information from knowledge professionals (i.e. academics or researchers) to police professionals (i.e. law enforcement officials), but also *vice versa*. The goal is to create an ongoing and mutually beneficial and reinforcing relationship between research and practice. Where the knowledge and professional communities have come to cooperate so closely that their interests are combined within the same individuals, these are sometimes called ‘pracademics’ (practician academics). Those who try to ensure that practice is based on the best available knowledge and, in turn, builds on it have also been called ‘evidence cops’.⁴

Effectively integrating evidence-based practices into policing organisations, as well as integrating police practice and expertise into research organisations, will require the use of a shared language. This must begin with a common understanding of what is meant by ‘evidence’ in the context of ‘evidence-based policing’. It isn’t what most law enforcement professionals would think.

Beyond the law of evidence and forensic science

Many in law enforcement would associate ‘evidence’ with something related to the law of evidence. The South African law of evidence is part of procedural law, based on English common law. It refers to the set of rules that govern the admissibility and weighting of facts in various legal proceedings, including criminal trials.

Evidence in this sense is roughly synonymous with ‘proof’. It includes testimony (oral or written statements), exhibits (physical objects), and documentary material. It is the sum of information provided to assist in the court’s determination of truth, including whether the accused can fairly be considered guilty of the crime at issue. In the course of the investigation process, law enforcement officers are required to appropriately collect, handle, and preserve evidence such that a strong link can be presented in court between a specific individual and a specific criminal act.

Law enforcement professionals may also think of 'evidence' as relating to the area of forensic science. The term forensic comes from the Latin word *forum*, meaning 'for the courts'. This field is based on what is known as the Locard Principle, which states that every contact leaves a trace. It involves the examination of physical exhibit material in the investigation of crime in order to ensure correct prosecution.

The goal is to create a mutually beneficial and reinforcing relationship between research and practice

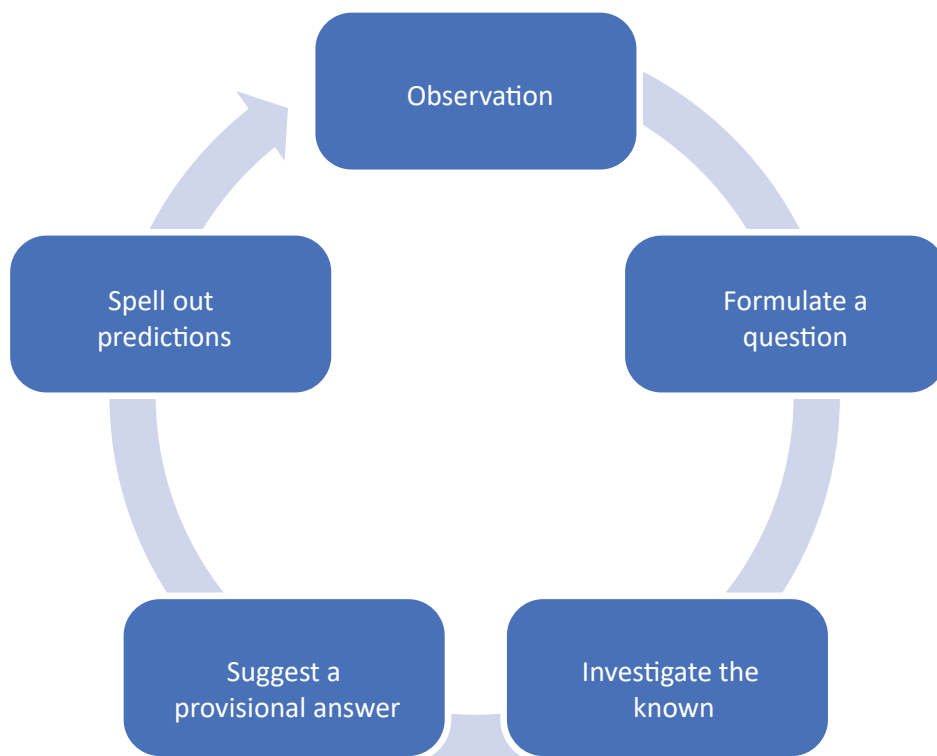
Specialist law enforcement officers are required to apply principles of physics and chemistry, for example as applied in ballistics analysis, toxicology, DNA or dental record identification, or investigations into matters involving explosives or suspected arson.

These are defensible and established uses of the term 'evidence' within law enforcement. But neither the law of evidence nor applied forensic science provides appropriate frameworks for understanding evidence in the context of evidence-based practice and policing.

Evidence: an empirical spectrum

There is a broader encompassing definition. The term comes from the Latin *evidens*, which means 'visible', formed by the combination of *e*, meaning 'out', and *video*, meaning 'see'. In the broadest sense, evidence thus refers to any information based on empirical observation. The empirical is that which is derived from the senses, in contrast to that based on tradition, intuition, principle, or opinion. Evidence is the product of any observation for the purpose of establishing reality or truth (for example, as opposed to observation for aesthetic reasons).

Figure 2: The broad cycle of the scientific method



Source: Adapted from Robinson, 2004

At the other end of what we might think of as a spectrum, evidence means something very narrow and specific. It refers to knowledge derived from the scientific method. The scientific method seeks to replace subjective and unstructured impressions with statements that have been demonstrated to withstand logical and empirical scrutiny. It refers to a process, cycle, or wheel that can be described in Figure 2 and as follows.⁵

The quality of evidence is determined by the quality of research design

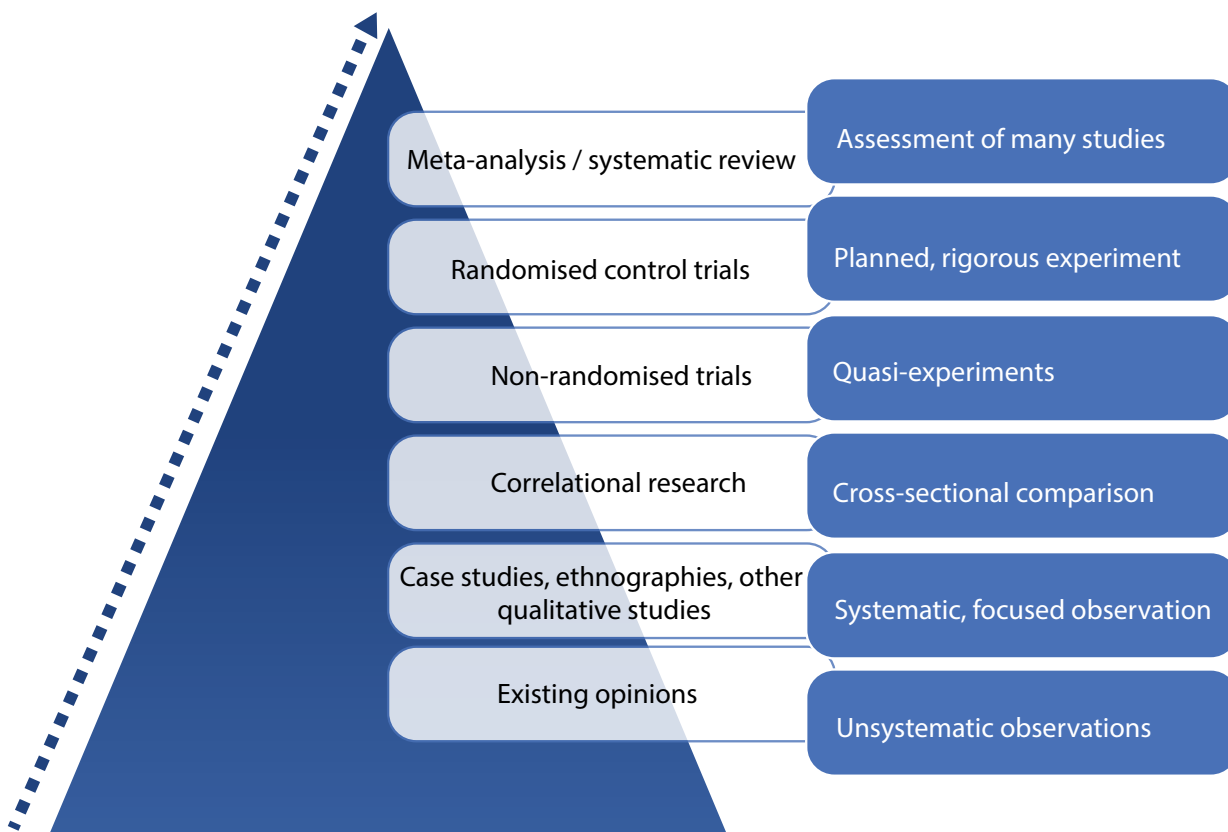
It often begins with an observation that suggests a question about how the world works – say, about whether one thing causes another thing. A plausible answer or explanation is then suggested, based on existing knowledge. This provisional idea, or educated

guess, is also called a hypothesis. This comes from the ancient Greek terms ὑπό (hupó, meaning ‘below’) and τίθημι (títhēmi, meaning ‘I put’). It means to place under, support, or form the basis of a belief.

The next step is to logically determine what observations you would expect to find, assuming the proposed answer is correct. Then these predictions are put to the test by means of experiment, meaning some form of systematic empirical observation. The goal of the experiment is to seek contradiction of the hypothesis.

The core of science is this approach of rigorous scepticism – of not only assuming that you are wrong but making every effort to prove yourself wrong. Scientific research is the systematic accumulation of those tentative ideas that have been empirically tested and haven’t (yet) been successfully proven wrong.

Figure 3: A hierarchy of research design rigour



Source: Adapted from Petticrew & Roberts, 2003

Hierarchy of research design

The quality of evidence is determined by the quality of research design. Just as the law of evidence refers to the admissibility and weighting of facts in legal judgment, in orthodox thinking about the scientific method there is a hierarchy of research design which refers to the admissibility and weighting of facts in scientific judgement. There are many different versions of such a hierarchy, but see Figure 3 as one example.⁶

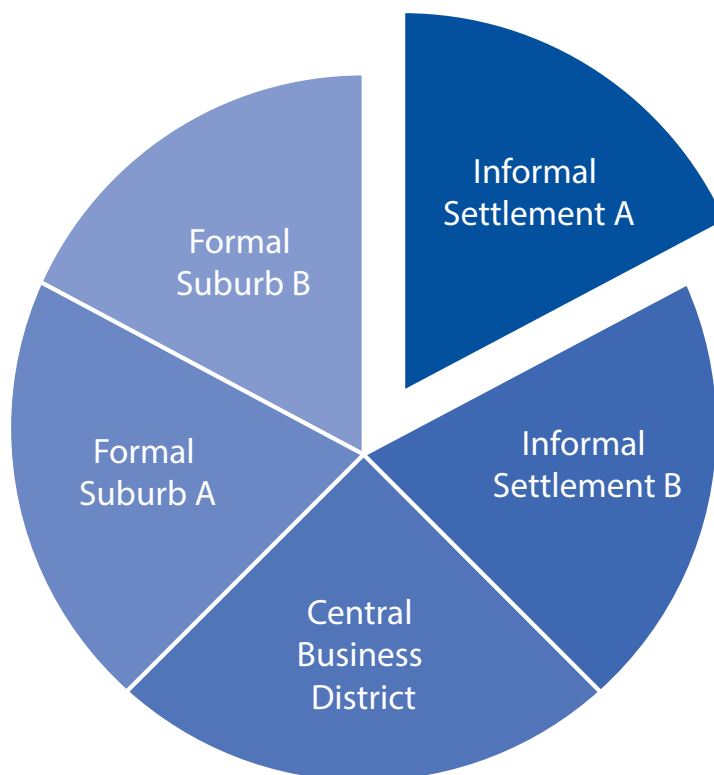
The lower down on the hierarchy, the greater is the remaining scope for bias and the more likely it is that the research results can be mistaken. The higher up on the hierarchy, the greater is the scientific rigour, and the more confidence there can be that the results are sound and reliable. The randomised control trial is generally considered the gold standard of evaluation research, as it is the best way to eliminate alternative explanations. Ideally, trials should be repeated numerous times to allow for a combined overview

and an understanding of the likelihood of the intended outcomes in different circumstances.

Most people probably want their medical decisions to be based on research as high up on the hierarchy as possible. Similarly, it makes sense that policing decisions should be based on the most rigorous research possible. Safety is no less important or complex than health. The first randomised controlled trial of police practice was launched in Liverpool in 1963 and there have been over 100 since, although disappointingly few of the resulting insights have gone on to shape policy.⁷

Randomised control trials remain less common in criminal justice research than in medicine.⁸ Non-experimental methods are less disruptive and may find more receptivity among police.⁹ In reality, even medical decisions are seldom perfectly evidence-based. Moreover, every step up the ladder involves a great deal more expense and practical difficulty. An example should drive home the argument suggested by the hierarchy.

Figure 4: Simple scenario graphic of police station areas



Source: Adapted from Robinson, 2004

Research design examples

Suppose that there is a town that is served by only five police stations. These stations are responsible for five areas, namely 'Informal Settlement A', 'Informal Settlement B', 'Central Business District', 'Formal Suburb A', and 'Formal Suburb B'. See Figure 4, for example.

Suppose also that the goal is to reduce rates of robbery in the town and that the colours indicated on this chart represent relative levels of robbery. In other words, Informal Settlement A is ranked first and worst among the five in terms of its level of robbery, with the others in turn ranking lower all the way to Formal Suburb B, which has the lowest level of robbery.

Resources have been made available for some increased police vehicle patrols, but the question now is: will these patrols be more effective in reducing robbery if they are deployed during the day or the night?

Option 1: Unsystematic observations

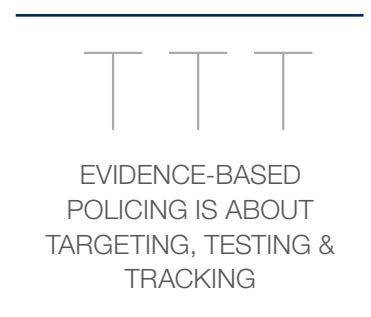
The first possible way to decide when to allocate the additional patrols is to draw on existing opinions. One could ask a few of the relevant law enforcement officers or ordinary people what they think. This has the advantage of being an easy and inexpensive method.

Its disadvantage, however, is that these views are based on unsystematic observations. They may be highly subjective and variable. One station commander may recommend night patrols because she happens to have had success with this in the past. One officer may suggest day patrols because he dislikes working at night. One layperson may seldom leave her home at night and therefore feel that night patrols would be a waste. There is no useful way to validate or adjudicate between these views.

Option 2: Systematic, focused observation

Instead of relying on pre-existing observations, one could conduct a non-experimental research project in order to provide a more solid understanding of views or conditions in a given time and place. Examples include a representative survey of residents, a detailed ethnographic account of the activities engaged in by law enforcement during a certain type of patrol, or a qualitative description of the conditions that cause distress among a certain sub-population.

Because this observation is intentional and systematic, it offers more scope for confidence in interpreting its results. The strengths and weaknesses of such methodologies are already well understood. One of these weaknesses is that the results may not be applied generally to other contexts. For example, the observation that women in Informal Settlement A feel particularly vulnerable to robbery when using communal toilets at night is certainly useful to our decision making but may not apply elsewhere. For a wider understanding, what is needed is some form of comparison.



Option 3: Cross-sectional comparison

The simplest comparison is one that examines the possible causes and effects involved in cross-section, meaning at one moment in time. For example, one could investigate whether there is a correlation between existing patrol times and robbery levels. This might reveal, say, that the stations that currently implement more night patrols tend to have lower rates of robbery. So we may observe that Informal Settlement A has very few night patrols and high robbery levels, whereas Formal Suburb B has many night patrols and low robbery levels.

The difficulty with a non-experimental design like this is that it cannot eliminate alternative explanations. It may be the case that prioritising night patrols is more effective at reducing robbery, but it may equally be the case that there is some other factor that explains these things. For example, a lack of street lighting in Informal Settlement A may independently explain both its few night patrols and its high rates of robbery. Places usually differ in many ways at once, such that one would need to include numerous control variables to ensure that the observed difference in patrol times is the factor that determines robbery levels.

Option 4: Quasi-experiment

Non-random quasi-experiments offer the opportunity to narrow in on the causal impact of specific factors. Unplanned but singular events can create a situation where there is (in theory) only the one identified difference between contexts. Examples include a major redeployment following a terrorist attack or perhaps even a technological shift. Informal Settlement A might be selected for increased day patrols or by chance be

without lights on its police vehicles, such that it goes months without any night patrols.

If this time period shows increased robbery, compared to an appropriate reference period or a similar area that did not see the change, then there is relatively good reason to believe that observed differences in the prevalence of robbery are due to this change in patrol times. The main challenge with non-random quasi-experiments is the possibility of selection bias. It may be that the unplanned event happened in that place for good reason – perhaps even for the same reason that the area has that crime profile. For example, the fact that patrol vehicles serving Informal Settlement A were without lights for a month may be explained by poor police leadership or under-resourcing or other factors that may have an independent impact on levels of robbery.

Option 5: Planned, rigorous experiment

The best way to eliminate alternative potential explanations is to do a randomised trial with a control group. In this way, one area can be randomly selected for the experiment, while all other factors are left unchanged. So Formal Suburb B might be randomly chosen for an increase in night patrols, with Formal Suburb A used as comparison with no change in patrols. If Formal Suburb B sees a significant robbery decrease during this time, this is good reason to believe that patrol times are the reason.

Implementing an experiment like this is likely to involve major expense and buy-in from numerous parties. Its results may be negative, or inconclusive. A single experiment may also be of little use in predicting what would happen in a different time and place.

Table 1: Example of a research summary for decision making

EMMIE evidence rating framework		
Effect	Impact on crime	Increase, decrease, no effect?
Mechanism	How it works	What is it that makes it work?
Moderators	Where it works	In what circumstances is it likely to work / not work?
Implementation	How to do it	What local conditions need to be considered?
Economic cost	How much it costs	Is it cost effective?

Source: Johnson, Tilley & Bowers, 2015

Option 6: Assessment of many studies

Finally, there is the pinnacle and ideal case, where numerous trials have been conducted in different settings and the results of the trials are combined into a systematic summary. This can synthesise and sort the possible decisions and suggest broader lessons about which kinds of decisions are likely to work in which contexts.

At least some members of the police will need to be recast in the role of scientists

The EMMIE evidence rating framework, for example, uses the metrics of Effect, Mechanism, Moderators, Implementation and Economic Cost.¹⁰

This tool makes it possible to make policing decisions based on a neat summary reflecting the rigour in existing research design, the likeliest nature and extent of effects, the type or scope of the target (namely on the level of the individual, group, micro-place, neighbourhood, jurisdiction, or nation-state), and its level of proactivity (varying between reactive, proactive, and highly proactive).

Numerous other terms play an important role in interpreting the results of statistical analysis and the scientific method. To facilitate the smooth and mutual flow of ideas between the policing and knowledge communities, the two would need to come to a shared understanding of such concepts as attrition, maturation, confirmation bias, selection bias, outliers, regression to the mean, dependent and independent variables, Type I errors (false positives) and Type II errors (false negatives), among others. This may suggest the need for police to embrace yet another redefinition of their role.

From police officer-spy to police officer-scientist

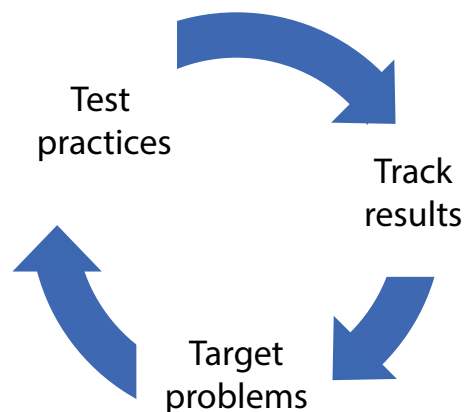
There have been numerous successive movements in popular conceptions of the most appropriate model, goals, and methods of policing. Police have at different times been encouraged to be more like soldiers, volunteer local chiefs, bounty hunters, professional legal administrators, social workers, and spies.

This last is associated with the prioritisation of crime intelligence. This refers to information gathered, analysed, recorded and disseminated by law enforcement agencies concerning types of crime, identified criminals and known or suspected criminal groups – in an effort to anticipate, monitor, or prevent criminal activity. The evidence-based policing movement sees at least some members of the police recast in the role of scientists. It requires an organisational culture that promotes critical thinking.

Evidence-based policing emerged with declining faith in the traditional model of policing summarised as the ‘three Rs’: random patrol, rapid response, and reactive investigations. It proposes replacing these with the ‘three Ts’: targeting, testing and tracking.¹¹

Targeting means focusing activities on the specific problems, people, or places where research suggests you can have the most impact. Tracking means documenting practices and outcomes. Testing means empirical experimentation. It requires that police practices be subjected to the scientific method to examine cause and effect, using the most rigorous research design possible. The three should work in a cycle whereby the process is open to constant revision and improvement, as shown in Figure 6.

Figure 6: The continuous cycle of targeting, testing, and tracking



This does not suggest the existence of an objective, perfect, one-size-fits-all answer. There will always be an important role for local context and agency.¹²

Conclusion: critical thinking about what works

Policing decisions might ideally be based on research designs of the same rigour we expect in medical decisions. The important point about 'evidence' in the context of evidence-based practice, however, is that it exists on a spectrum. There are many small steps that can make policing a bit more evidence-based and can help build current practices into better evidence for future decisions. A slow, quiet iterative process may be preferable to a high profile and rapidly implemented 'programme' which promises more than it can deliver.¹³ This can complement the goals of other policing models.

At its core, evidence-based practice is about applying critical thinking to the simple question: what works? It asks us to apply the broad principles of the scientific method. This means curiosity and scepticism, careful empirical observation, and a willingness to be proven wrong. It involves working away from decisions based on assumption and towards decisions based on empirical evaluation.

South Africa needs to identify and prioritise those activities that are most likely to reduce crime and build trust in the police. It needs to minimise waste and maximise the impact of limited resources. Its police could do with investments in a reputation for professionalism and confidence in its decisions. There is major scope for policing professionals and knowledge professionals to receive and offer mutual benefits through closer alignment and the use of a common language. There are many existing researchers with whom police can partner.

Remaining scepticism about the value or viability of evidence-based policing should be embraced – this is

precisely the way to engage with knowledge in the mode of a scientist. The next step is to test it and find out.

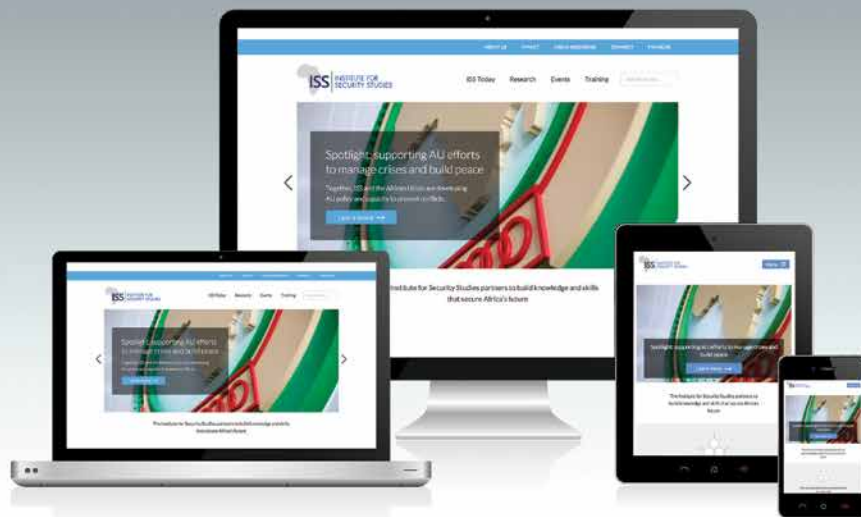
Notes

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